

What is claimed is:

1. An isolated and purified DNA encoding a protein selected from the group consisting of:

(A) a protein which has the amino acid sequence of SEQ ID NO: 2;

(B) a variant of a protein which has the amino acid sequence of SEQ ID NO: 2 comprising substitution, deletion, insertion or addition of one or several amino acid residues and has an activity for producing a polysaccharide;

(C) a protein which has the amino acid sequence of SEQ ID NO: 4; and

(D) a variant of a protein which has the amino acid sequence of SEQ ID NO: 4 comprising substitution, deletion, insertion or addition of one or several amino acid residues and has an activity for producing a polysaccharide.

2. The DNA according to claim 1, wherein said DNA is selected from the group consisting of:

(a) a DNA which has the nucleotide sequence of SEQ ID NO: 1;

(b) a DNA which is hybridizable with a DNA having the nucleotide sequence of SEQ ID NO: 1 or a probe that can be produced from said nucleotide sequence under stringent conditions;

(c) a DNA which has the nucleotide sequence of SEQ ID NO: 3; and

(d) a DNA which is hybridizable with a DNA having the nucleotide sequence of SEQ ID NO: 3 or a probe that can be produced from said nucleotide sequence under stringent conditions.

3. The DNA according to claim 1, which originates from a chromosome of a *Methylophilus* bacterium.

4. A methanol-utilizing bacterium, whereby the DNA according to claim 1 has been introduced, and said bacterium has improved ability to produce a polysaccharide.

5. The bacterium according to claim 4, which is a *Methylophilus* bacterium.

6. A method for producing a polysaccharide, comprising the steps of

A) culturing the bacterium according to claim 4 in a medium containing methanol as a major carbon source, allowing accumulation of the polysaccharide in the

medium or in the bacterium, and

B) collecting the polysaccharide from the medium or the cells.

7. A methanol-utilizing bacterium having an ability to reduce production of a polysaccharide, wherein a gene on said bacterium's chromosome has the same nucleotide sequence as the DNA of claim 1, or which has homology to the DNA of claim 1 to such an extent that homologous recombination results in disruption of said DNA, thereby suppressing expression of the gene.

8. The bacterium according to claim 7, which is a *Methylophilus* bacterium.

9. A method for producing a target substance comprising the steps of

A) culturing the bacterium according to claim 7 which produces the target substance other than polysaccharide in a medium containing methanol as a major carbon source, allowing accumulation of the target substance in the medium or cells of the bacterium and

B) collecting the target substance from the medium or the cells.